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10/694,999	10/29/2003	Wai M. Lee	63702-226-US	5303

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EXAMINER

MOORE, KARLA A

ART UNIT PAPER NUMBER

1763

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/694,999

**Applicant(s)**

LEE ET AL.

**Examiner**

Karla Moore

**Art Unit**

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37-75 is/are pending in the application.
- 4a) Of the above claim(s) 52 and 73 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-51, 53-72, 74 and 75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. 09/874,330.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1003</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of the species restriction in the reply filed on 8 August 2006 is acknowledged. The traversal is on the ground(s) that the application contains generic claims. This is not found persuasive because the fact that an application contains generic claims is not recognized as a reason for examination of a plurality of species in a single application.

The requirement is still deemed proper and is therefore made FINAL.

2. Examiner further notes that in addition to claim 52, claim 73 also reads on the non-elected species and the claim is therefore not included in the following rejections.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 37-38, 44-45, 51, 53-56, 61-62, 68-72 and 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,994,030 to Sugihara et al. in view of U.S. Patent No. 4,868,068 to Yamaguchi et al.

5. Sugihara et al. disclose an apparatus for converting a precursor material to form a film/layer adherent to a substrate substantially as claimed and comprising: a transfer device (Figures 1 and 2, 4) to deliver substrates between stations; a coating station (3) wherein the substrate is coated with a sufficient amount of precursor material to coat at least a portion of the substrate, wherein upon exposure to sufficient energy forms a film/layer adherent to the substrate; a pre-convert station (1) having a pre-conversion energy generator adapted to expose at least portions of the precursor material to a pre-conversion energy exposure dose of such intensity and duration such that the exposed pre-converted

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material is not converted to a degree sufficient to impair pattern resolution; and a pattern convert station (2) having a conversion energy generator adapted to expose portions of the pre-converted material to a patterned conversion energy dose to form a pattern adherent to the substrate.

6. However, while Sugihara et al. do teach that the apparatus can be used to carry out different methods (column 10, rows 10-14), the disclosure does not specifically suggest converting an organometallic precursor material. Nor does the disclosure mention a load station.

7. Yamaguchi et al. teach providing a multichamber (including a load station at Figure 2, 43) apparatus for coating and converting an organometallic precursor for the purpose of forming an interconnected large-scale multilayer IC chip, which facilitates the design, trial manufacture and the analysis of faults in multilayer IC chips in a mass production process and thereby the period of development stage is reduced, the mass-production line becomes operative within a short period of time and the yield of the mass-production line is reduced development stage, the mass-production line becomes operative within a short preparatory time and the yield of the mass production line is improved (column 14, rows 22-32).

8. It would have been obvious to one of ordinary skill in the art to have provided the apparatus of Sugihara et al capable of coating and converting an organometallic material and also to have provided a load station in Sugihara et al. in order to form an interconnected large-scale multilayer IC chip, which facilitates the design, trial manufacture and analysis of faults in multilayer IC chips in a mass production process and thereby the period of development stage is reduced, the mass-production line becomes operative within a short period of time and the yield of the mass-production line is reduced development stage, the mass-production line becomes operative within a short preparatory time and the yield of the mass production line is improved as taught by Yamaguchi et al.

9. With respect to the energy sources used as recited in claims 38 and 44-45, the preconversion energy source may comprises a heat source, a light source or a combination thereof and the conversion energy source may comprise a light source, an electron beam source, an ion beam source or a combination thereof. See column 9, row 66 through column 10, rows 9.

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10. With respect to claim 54, means for developing the pattern (3) are further provided in Sugihara et al.

11. With respect to claim 55, a plurality of pattern convert stations (i.e. first and second pattern convert stations).

12. With respect to claim 56 and 61-62, the preconversion energy source may comprises a heat source, a light source or a combination thereof and the conversion energy sources may comprise a light source, an electron beam source, an ion beam source or a combination thereof. See column 9, row 66 through column 10, rows 9.

13. With respect to claim 68, the second conversion energy generator is different (i.e. distinct) than the first conversion energy generator.

14. With respect to claim 69, the second conversion energy generator is the same as the first conversion energy generator (both electron beam energy generators).

15. With respect to claims 70 and 71, the atmospheres of each of the preconvert and convert stations is different (see Figure 2).

16. With respect to claim 72, the apparatus comprises a plurality of first and second pattern convert stations after a preconvert station. See Figures 1 and 2.

17. With respect to claim 75, each of the limitations is addressed above.

18. Further with respect to claims 51, 53 and 74, Sugihara et al. teach that the number and arrangement of preconversion and conversion stations can be chosen as dictated by a desired processing method. the courts have ruled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The courts have further ruled that the mere rearrangement of parts which does not modify the operation of a device is prima facie obvious. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

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19. Claims 39-43, 46-50, 57-60 and 63-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugihara et al. and Yamaguchi et al. as applied to claims 37-38, 44-45, 51, 53-56, 61-62, 68-72 and 74-75 above, and further in view of U.S. Patent No. 5,178,989 to Heller et al.

20. Sugihara et al. and Yamaguchi et al. disclose the invention substantially as claimed and as described above.

21. However, while Sugihara et al. and Yamaguchi et al. do teach that different types of energy sources can be used in the invention, Sugihara et al. and Yamaguchi et al. fail to explicitly teach the preconversion energy generator as a heat source and/or the conversion energy generator as a light source.

22. Heller et al. teach providing preconversion energy generators as a heat source and/or conversion energy generators as a light sources (Figure 1, 14 and 16, respectively; also see column 15, row 55 through column 16, row 5) for the purpose of providing an apparatus and method comprising materials and pattern transfer processes which exhibit improved characteristics for performing as a photoresist in microlithography processes (column 3, row 19 through column 4, row 2).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a preconversion energy generator as a heat source and/or the conversion energy generator as a light source in Sugihara et al. and Yamaguchi et al. in order to provide an apparatus and method comprising materials and pattern transfer processes which exhibit improved characteristics for performing as a photoresist in microlithography processes as taught by Heller et al.

24. With respect to the specific wavelengths used, the courts have ruled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

### **Conclusion**

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP's 4712013; 5534312; 5989759; and 6159644 disclose pattern exposure processes and/or apparatus.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**KARLA MOORE**  
**PRIMARY EXAMINER**

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30 October 2006